

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

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PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

| | |
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| Applicant's or agent's file reference 90046PCT | Date of Mailing (day/month/year) |
| International application No. PCT/US03/20064 | International filing date (day/month/year) 26 JUNE 2003 |
| Applicant BROADBAND INNOVATIONS, INC. | |

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.
Filing of amendments and statement under Article 19:
 The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.
2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
 - ☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
 - ☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

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| Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 | Authorized officer HENRY CHOE <i>Shawn J. Hooper</i> |
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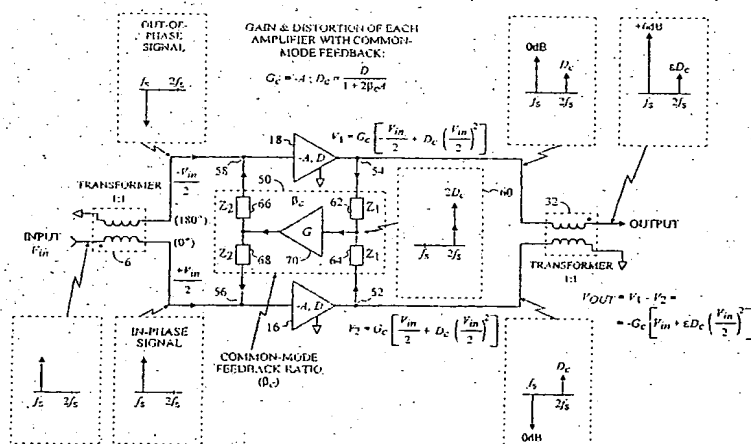
Published:

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(54) Title: EVEN ORDER DISTORTION ELIMINATION IN PUSH-PULL OR DIFFERENTIAL AMPLIFIERS AND CIRCUITS



(57) Abstract: A method for improving or eliminating second harmonic and higher even order distortion terms and balance of fundamental signals in push-pull amplifiers and other differential circuits is disclosed. A common-mode (CM) signal is generated as a sum of two complementary (out of phase) signals in a summation network (32). The CM signal contains even order distortion terms only, while the fundamental signal and odd order distortion terms are canceled, thus providing a correction signal that can be used to reduce even order distortion terms, by injecting the correction signal, with proper phase and amplitude, into suitable circuit nodes. For feedback (70), the correction signal is injected at the input (56, 58) of the amplifiers (16, 18), for feed-forward, it's injected at the output. The correction signal can be amplified to higher levels and injected into the circuit, without affecting gain of fundamental signals; and can result in significant even order distortion improvements, and improved balance of complementary fundamental signals.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/20064

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H03F 1/26

US CL : 330/69, 107, 109, 149, 301

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 330/69, 107, 109, 149, 301

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IEEE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
amplifier and distortion

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|-----------|--|-----------------------|
| X | US 5,041,235 A (KILBARGER) 20 August 1991 (20.08.1991), see entire document. | 1-42 |

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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| * Special categories of cited documents: | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| "A" document defining the general state of the art which is not considered to be of particular relevance | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
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| "P" document published prior to the international filing date but later than the priority date claimed | |

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